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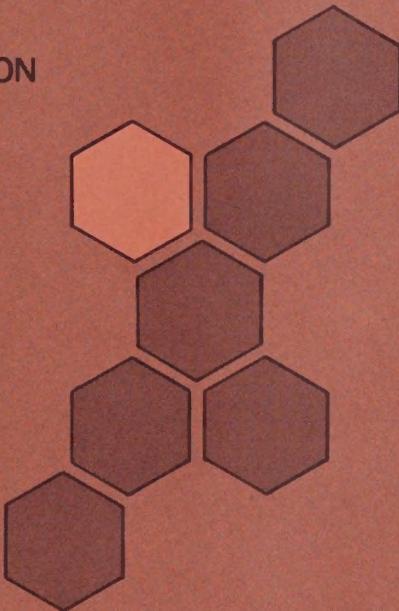
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RESOURCES AND PRODUCTION PRACTICES IN THE HIGH PLAINS

Don E. Ethridge, Billy G. Freeman
Dale L. Shaw and W. C. McArthur

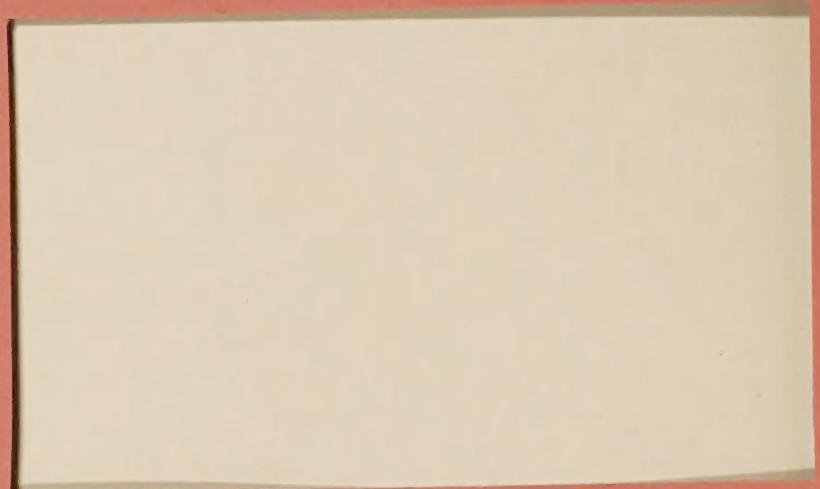
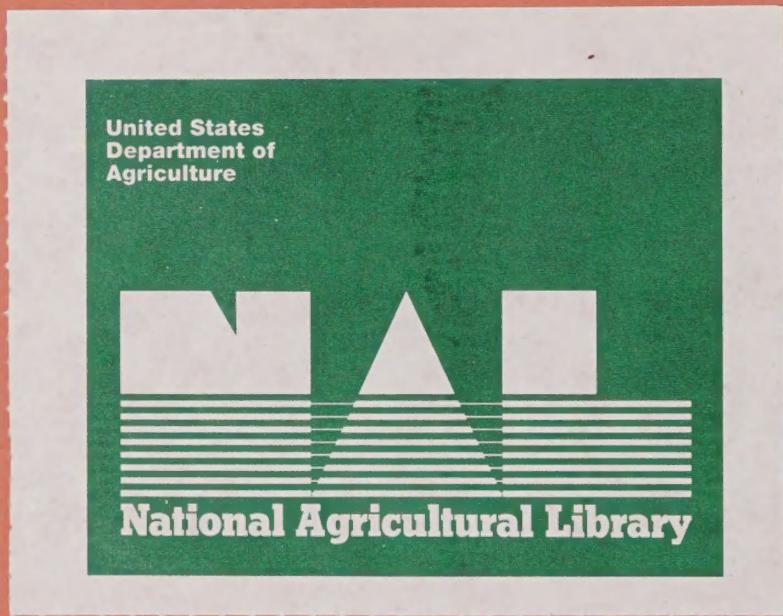
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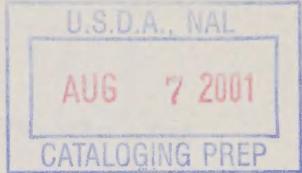
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RESOURCES AND PRODUCTION PRACTICES
IN THE HIGH PLAINS

Don E. Ethridge,^{1/} Billy G. Freeman,^{2/}
Dale L. Shaw,^{1/} and W. C. McArthur^{3/}

The High Plains is a major cotton producing area. In 1974, the area accounted for almost 20 percent of the total acreage planted to cotton in the United States. Cotton has remained a strong competitor in the enterprise mix of the area since the 1920s. Irrigation farming, a development largely following World War II, has increased agricultural production significantly in the area. In recent years, however, the declining water table and rising costs of irrigation have been major concerns throughout much of the region. This report presents information on the resource base, production practices, and problems affecting farming in the area with emphasis on cotton.

Land Resources

The High Plains encompasses 25 counties in West Texas and four counties in Eastern New Mexico (figure 1). The total land area is about 22.5 million acres. Over 50 percent is cropland. More than 60 percent of the cropland in the region is irrigated (table 1). The economy of the region is heavily dependent on agriculture. Cotton is the primary crop,

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HIGH PLAINS AREA

TEXAS-NEW MEXICO

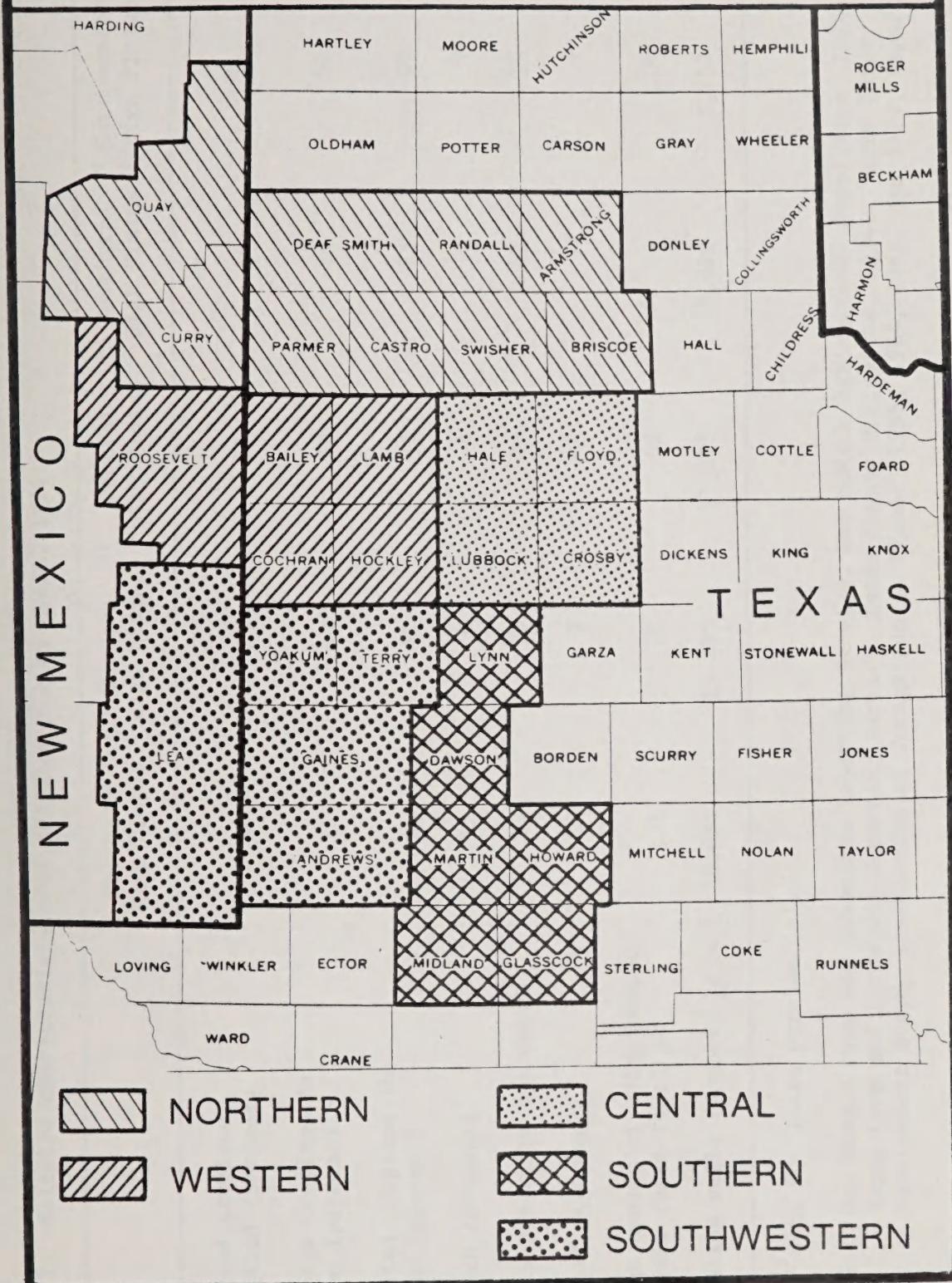


Figure 1.

Table 1: Selected characteristics of the High Plains areas, 1974

Item	Northern High Plains	Western High Plains	Central High Plains	Southern High Plains	Southwestern High Plains	Region total
Harvested cropland irrigated (percent)	84	73	81	28	51	71
Harvested cropland in cotton (percent)	11	40	52	74	50	38
Harvested cropland in grains (percent)	81	52	42	23	43	55
corn (percent)	19	6	1	0	0	7
grain sorghum (percent)	32	36	29	22	38	32
wheat (percent)	29	9	12	1	5	15
Average amount of water pumped per well (acre feet) <u>1/</u>	131	77	92	40	104	96
Irrigation wells (number) <u>1/</u>	18,084	15,795	17,525	5,610	5,757	62,771

1/ Data for Texas portion only.

Sources: New Mexico Crop and Livestock Reporting Service, New Mexico Agricultural Statistics, 1974. Texas Crop and Livestock Reporting Service, Texas County Statistics, 1974. Texas Water Development Board, Inventories of Irrigation in Texas: 1958, 1964, 1969, and 1974, Report 196.

normally occupying 40 percent or more of the cropland. Most of the cotton is short staple, storm proof varieties except for a few thousand acres of Acala; cotton quality is highly variable because of weather conditions. Grain crops -- grain sorghum, wheat, and corn -- occupy most of the remainder of the cropland. The livestock industry is a significant factor in the region; cow-calf enterprises occupy much of the native pasture land. Wheat is commonly used to provide winter grazing for stocker cattle, and many large cattle feedlots utilize a portion of the feedgrains produced in the region. Farmland typically sells for \$200 to \$1,500 per acre, depending on such factors as location, topography, soils, and the quantity of irrigation water available.

Production Areas and Land Use

The High Plains is divided into five production areas based on irrigation, cropping patterns, and cotton yields: the Northern, Western, Central, Southern, and Southwestern areas (figure 1). Cotton increases and grain crops decrease in relative importance when going from northwest to southeast across the High Plains because of elevation and length of growing season (table 2). Cotton acreage increased substantially in all areas except the northern High Plains following the lifting of acreage controls in 1974.

Grain sorghum is the major grain crop for the area as a whole, but wheat and corn occupy significant acreages in the northern portion of the High Plains (appendix tables 1-5). Consequently, cattle feedlots are more prevalent in those areas.

Table 2. Cropland utilization within production areas of the High Plains, 1974

Crop	Cropland harvested					
	Northern High Plains	Western High Plains	Central High Plains	Southern High Plains	Southwestern High Plains	Region total
-----1,000 acres-----						
Cotton	194.8	423.0	717.2	364.8	457.5	2,157.3
Alfalfa	23.1	27.1	6.1	4.6	35.5	96.4
Grains	1,475.8	552.1	579.9	115.7	396.9	3,120.4
(Corn)	(345.9)	(66.0)	(9.7)	(0)	(.7)	(422.3)
(Sorghum)	(576.4)	(383.6)	(402.4)	(106.9)	(352.7)	(1,822.0)
(Wheat)	(533.2)	(98.6)	(167.4)	(8.2)	(42.1)	(849.5)
Vegetables	13.5	7.3	4.9	.6	11.1	37.4
Trees and vines	.6	.6	.3	.6	3.5	5.6
Other	105.4	43.8	73.8	9.8	12.5	245.3
Total	1,813.2	1,053.9	1,382.2	496.1	917.0	5,662.4
(Irrigated)	(1,530.2)	(767.2)	(1,119.7)	(138.1)	(465.3)	(4,020.5)

Sources: New Mexico Crop and Livestock Reporting Service, New Mexico Agricultural Statistics, 1974. New Mexico State University Agricultural Experiment Station, Irrigated Cropland Acreage and Sources of Water Used for Irrigation in New Mexico by County, Research Report 305. Texas Crop and Livestock Reporting Service, Texas County Statistics, 1974. Texas Water Development Board, Inventories of Irrigation in Texas: 1958, 1964, 1969, and 1974, Report 196.

Cotton Yields

Cotton yields tend to vary with irrigation and length of growing season. Median yields for the period 1960-74 were highest in the Central High Plains (533 pounds of lint per acre) where about 80 percent of the cropland is irrigated and the growing season is one to two weeks longer than in the Western area (appendix tables 6-10). Yields were lowest in the Southern High Plains (382 pounds per acre) where the growing season is slightly longer but less than 30 percent of the cropland is irrigated. Median yields in the Northern, Western, and Southwestern High Plains areas were 444, 426, and 468 pounds per acre, respectively, for that 15-year period.

Topography, Soils, and Climate

Topography in the High Plains is generally flat to gently rolling. The terrain is relatively more gently rolling in the Western, Southwestern, and Southern High Plains with some rolling terrain in the Southern area. Terracing is a common practice in areas where a rougher rolling terrain causes erosion problems. However, topography is not a restricting factor in crop production. There is little runoff of rainfall from the High Plains except in a small part of the area located near the caprock--the geologic escarpment separating the High Plains from the Rolling Plains to the east. The region is, however, dotted with playa lakes (small, shallow sinks in which rainfall runoff accumulates for short periods of time) at the rate of about one playa lake per 640 acres of land.

Elevation rises from 3,000 to 3,100 feet on the eastern side of the Plains to 4,300 to 4,500 feet on the western side. The average length

of the growing season ranges from about 185 days in the Western area to 215 days in the Southern High Plains. The Central and Southwestern areas have a frost-free growing season of about 200 and 210 days, respectively. The Northern area has about 190 days. This is longer than the season in the Western area, even though it extends further north. The major problem with the growing season is its variability rather than its average length. The problem is even more critical in the Northern and Western areas. The last killing frost in the spring may vary two weeks or more; the first killing frost in the fall may vary six weeks. Thus, producers in the Northern and Western areas face considerably more production risk from yield variation due to the growing season than producers located further east and south.

Soils in the region vary from a very coarse to a fine texture. Medium to heavy textured soils predominate in the Northern and Central areas, medium to coarse in the Western and Southern sections, and coarse textured soils are predominant in the Southwestern High Plains. Soils are fertile and not a limiting factor in crop production. The coarse textured soils are subject to severe wind erosion, particularly in the February-April period when strong winds are more likely to occur. The wind hazard frequently extends into June or until crops reach a stage of growth which is sufficient to withstand the blowing sand. Soil texture, along with topography, has a major impact on irrigation practices and on the distribution systems used.

Rainfall varies from west to east, ranging from an average of 12 to 14 inches per year on the western edge of the High Plains to 20-22 inches on the east. On the average, rainfall is adequate for crop production; but the high variability, both from one year to the next and within years, makes non-irrigated crop production a much higher risk than irrigated production. Most of the rainfall occurs during the spring and summer

months; however, some rainfall during cotton harvest is not uncommon.

Summer temperatures during the day generally range from 85 to 100 degrees Fahrenheit. Low humidity and cool nights (about 70 degrees Fahrenheit) also characterize the High Plains.

Hail storms are common occurrences, particularly during May and June. The hail, along with blowing sand, can do substantial damage to young cotton plants which are highly vulnerable to damage in the early stages of growth. Corn and sorghum can withstand hail much better. Wheat, normally harvested in June and July, is susceptible to hail damage primarily when it is ready for harvest. Some farmers purchase hail insurance. Most diversify their crops between cotton and grains to reduce the risks of damage from storms.

Irrigation Water

The High Plains is not totally dependent on irrigation water for crop production, but irrigation is a major factor in the productivity of the region. Irrigation water is derived primarily (99 percent) from ground sources (table 3). The availability of water in the counties comprising the various areas is shown in appendix tables 11-15. The source of the irrigation water is the Ogallala aquifer which contains virtually a fixed quantity of water. There is no significant amount of natural recharge--it is estimated at 0.5 to one acre inch per year.^{1/} The water supply is being depleted as the water table is declining at an approximate rate of one to two feet each year. The distance to the bottom of the aquifer varies. Some areas have already exhausted the supply of water for irrigation from an economic standpoint. Economic adjustment in parts of the Southern and Central High Plains has already been dramatic.

^{1/} Texas Water Development Board's analytical studies of the Ogallala aquifer in various Texas counties.

Table 3. Irrigation water used in 1974, High Plains areas

Areas	Surface water	Groundwater	Total
1,000 acre feet			
Northern	62.6	2,710.0	2,772.6
Western	0	1,459.8	1,459.8
Central	7.8	1,617.2	1,625.0
Southern	1.4	227.1	228.5
Southwestern	.1	791.6	791.7
Total	71.9	6,805.7	6,877.6

Sources: New Mexico State Engineer's Office, January 1977 (unpublished).
 Texas Water Development Board, Inventories of Irrigation in Texas: 1958, 1964, 1969, and 1974, Report 196.

Availability of water for irrigation generally declines from north to south across the region. The region contains about 67,000 irrigation wells. Of these, about 30 percent are in the Northern, 26 percent in the Central and Western High Plains, 10 percent in the Southwestern, and 8 percent in the Southern High Plains. Pumping rates tend to vary across the region. The acre feet of water pumped per well in 1974, for example, was about 130 for the Northern, 100 in the Southwestern, 90 in the Central, 75 in the Western, and 40 in the Southern High Plains.^{2/}

The Northern section has the heaviest concentration of irrigation (84 percent of the harvested cropland was irrigated in 1974), followed by the Central (81 percent), the Western (73 percent), the Southwestern

^{2/} Texas Water Development Board, Inventories of Irrigation in Texas: 1958, 1964, 1969, and 1974, Report 196.

(54 percent), and the Southern High Plains (28 percent). There is a tendency for cotton to have a priority on available irrigation water, especially in the southern portions of the region. While 54 percent of the harvested cropland in the Southwestern area was irrigated in 1974, for example, about 70 percent of the harvested cotton acreage was irrigated. Corresponding percentages were 90 percent for the Northern area, 80 percent for the Central area, 86 percent for the Western, and 30 percent for the Southern High Plains.

As one proceeds north and west through the area, there is a pronounced tendency for wells to become larger and deeper. In the Northern and Western areas, well yields typically range from 400 to 800 gallons per minute (g.p.m.) with about 28 percent yielding 700 g.p.m. or more. Over 90 percent of the irrigation wells have pumping lifts exceeding 125 feet. The Southwestern area wells have slightly lower pumping rates (about 22 percent yield 700 g.p.m. or more) and pumping lifts (about 80 percent have pumping lifts over 125 feet). Well yields in the Central area decline to a range of 200 to 800 g.p.m. with only 20 percent yielding 700 g.p.m. or more. The wells in this area remain deep, however, as almost 95 percent have lifts above 125 feet. In the Southern High Plains, well yields typically range from 200 to 600 g.p.m. (none yields above 700 g.p.m.). Also the wells are typically shallow (only 65 percent have lifts above 125 feet).

Almost all of the wells in the High Plains (97 percent) are powered by either electricity or natural gas. Natural gas is the predominant fuel (63 percent). The remainder are fueled with liquid petroleum gas, diesel, or gasoline. The large-yielding, deeper wells are generally powered with natural gas. Seventy-five percent of the Northern area wells are

^{3/} Leon New, High Plains Irrigation Survey, Texas Agricultural Extension Service.

on natural gas, followed by 70 percent in the Southwestern area, 65 percent in the Central, 56 percent in the Western and 12 percent in the Southern High Plains.^{4/} The pattern of use is influenced greatly by accessibility to natural gas lines.

Production Practices and Problems

A small proportion of the farmers in the High Plains are full owners; most are part owners or tenants (appendix tables 16-26). Some 30 to 40 percent are full tenants. Land farmed by an individual operator may be widely dispersed as a strategy to reduce weather risk and on account of the location of land available for purchase or rent. It is not uncommon for an operator to have acreages of farmland 25 miles apart.

Leasing arrangements are primarily share rent. The common rental rate is one-fourth of the cotton and one-third of the grain. Landowners normally pay their crop-share proportion of the fertilizer costs on all crops, the ginning costs on cotton, the hauling costs on grains, plus the "below-ground" irrigation investment costs; the landlord is responsible for maintenance of the wells and pumps. Corporate farms are not common.

Farm size varies in the High Plains. A typical commercial farm exceeded 640 acres of cropland in 1974 (appendix table 16). Any farm with less than 320 acres generally could not be considered a viable commercial enterprise. A few farms have large acreages amounting to 35,000 acres or more, but these are atypical. Part-time farming, involving less than 10 percent of the farmers, is not a common practice. While there is some

^{4/} Leon New, High Plains Irrigation Survey (various years), Texas Agricultural Extension Service.

off-farm work in the oil industry in the Southwestern area, off-farm employment is insignificant in the High Plains.

Cotton Insects and Diseases

Insects are not a major problem in the High Plains. When insect problems such as early-season thrips do occur, they tend to be localized and are handled predominantly with custom application of insecticides. There is some threat of boll weevil encroachment from the Rolling Plains to the east, but a joint containment program paid for by High Plains producers and federal matching funds is administered by Plains Cotton Growers.

Some disease problems exist, but are not major in their proportions. Cotton root rot is a problem in some years in some areas, depending on temperature, rainfall, and the like. Verticillium wilt and nematodes affect some soils. Control measures consist of variety selection, treatment of seed, moldboarding the soil, and rotation with grains in instances where the problem becomes severe. Crop rotation patterns are not normally practiced, particularly where irrigation water is limited in quantity and location.

Weed Control

The major weed problems are annual weeds which can be controlled with preplant herbicides. Preplant herbicides are applied in late winter and incorporated in the topsoil with a tandem disk or spring tooth harrow. Perennial weeds such as Johnsongrass, crabgrass, and nutsedge exist but are not widespread. However, the widespread use of preplant herbicides is probably aggravating some of the perennial weed problems. Mechanical and hand weed control is also a common practice, particularly for cotton.

Two or three times over the field with a bed-knifer, cultivator, and/or rolling cultivator is typical of most farms. Some cotton receives one hand hoeing for weeds escaping the preplant herbicide. A rod-weeder is normally run over the listed beds immediately prior to planting to destroy any vegetation and make the land more uniform for planting.

Fertilizer Use

Fertilizer is not normally applied for dryland crop production unless late winter soil moisture conditions are ideal. In such cases, a light application of fertilizer may be applied. All irrigated cropland is fertilized. Nitrogen and phosphorus are used, but very little potassium. Application rates vary somewhat with soil type, crop, and available irrigation water. Typical rates range from 30 to 80 pounds of nitrogen (N) per acre and 20 to 60 pounds of phosphate (P_2O_5). Heavier rates are applied on sandy soils and where irrigation water is more abundant.

Irrigation Practices

Irrigation practices consist of both furrow and sprinkler methods, with furrow application predominating in the region. Furrow irrigation utilizes open, unlined ditches, aluminum gaited pipe, or underground pipe for distribution. Concrete lined ditches are rare. Sprinkler systems, mostly side-roll and circle-move, are used to a greater extent on the coarser soils, rolling topography, and where water is more limited. In the Northern and Central areas where soils are generally finer in texture and topography is flatter, about 95 percent of the land is furrow irrigated. In the Western and Southern High Plains, where soils are coarser and the topography is more rolling, 45 to 55 percent of the land is irrigated with sprinkler systems. In the Southwestern area, where soils are generally

sandy and the land is rolling, virtually 100 percent is sprinkler irrigated. There is a slow but steady trend toward an increase in automatic-move sprinkler systems throughout the High Plains because of the higher water distribution efficiency and lower labor requirements; thus a substitution of capital for water and labor. Water application rates vary significantly from about six acre inches applied in one pre-plant irrigation to about 18 acre inches applied as one pre-plant plus three post-plant irrigations. The rates depend on the amount and timing of rainfall and on irrigation water availability. Application rates on cotton for the various areas would typically range from ten to 18 acre inches in the Northern area, six to 18 inches in the Central, Western, and Southwestern areas, and six to 14 acre inches in the Southern High Plains. Summer grain crops require 25 to 50 percent more irrigation water than cotton, which gives cotton some comparative advantage, particularly in the limited water areas. Skip-row cropping patterns are common for dryland production. Either a plant two, skip one or plant two, skip two pattern is used to some extent under limited irrigation.

Machinery Use

The use of 6-row equipment is a standard practice in the High Plains. There is some movement to 8-row and even larger equipment. In fact, some 8 to 12 row equipment (and even a few 16-row units) are now being used in the Western, Southwestern, and Southern High Plains where topography permits. Soils in these areas are generally coarser than in other areas. Farmers utilize much the same equipment complement for cotton, grain sorghum, corn, and wheat. Equipment leasing is rare, as are custom field operations. Custom aerial application of insecticides is a predominant practice. Custom ground application of herbicides also is fairly common. Custom harvesting

of grains is not uncommon, but much of it occurs between neighbors. Cotton is normally machine stripped by the owner-operator. Some custom harvesting is done between neighbors. There is little cotton harvested by custom operators except 5,000 to 6,000 acres of Acala cotton in the Central and Southern areas--an acreage that is machine picked by custom operators from the Rio Grande Valley. The High Plains region, especially the Central, Southern, and Southwestern areas, is rapidly switching to palletless modules as a seed cotton handling system in the place of trailers holding five to six bales.

Tillage Operations

The tillage operations for cotton are typically the following: (1) stalk destruction with a 4-row, flail shredder, (2) chiseling, (3) breaking with disk or moldboard plows at depths of 12 to 16 inches every third year on irrigated (less often on dryland), (4) disking, (5) preplant herbicide incorporation, (6) fertilizer application, (7) bedding, (8) bed preparation, (9) planting, which often must be repeated because of wind, hail, or rain, (10) sandfighting which uses a rolling implement 30 to 80 feet in width consisting of sharp fingers for roughing the topsoil after spring rains (one to three times over), (11) two or three times over with a bed-knifer, rolling cultivator, and/or cultivator, (12) one or two times over with sweeps to open water furrows in furrow-irrigated land, and (13) harvesting with a mechanical brush-roll stripper. Deepbreaking at depths of about 30 inches every five to ten years is a common practice in the Southern and Southwestern High Plains. This operation pulls clay-type soils to the surface, thereby helping reduce wind erosion problems on the sandy soils. Stalk shredding is not always done on dryland cotton after harvest.

Furrow-irrigated crops are planted on top of the beds, leaving a furrow for watering; dryland and sprinkler-irrigated crops are planted in the furrow to facilitate catching water around the plants. Defoliation of cotton is not usually practiced; harvest normally begins about two weeks after the first killing freeze.

Summary

In summary, major production problems in the High Plains relate to the length of growing season, weather variability, and availability of irrigation water. Sand and hail storms often delay the start of spring-planted crops, particularly cotton. Partial replanting is common. Variability in growing season, especially from early fall freezes, can have a large impact on yields and quality. Erratic rainfall patterns create wide yield variations, particularly where irrigation water is absent or limited. The irrigated sections of the High Plains are facing a situation with respect to energy costs which could develop into a problem of major proportions. With pumping lifts increasing, well yields declining, and fuel prices rising, the cost of irrigation water rises accordingly. Most producers pay much higher than average prices for fuel because most of the natural gas used in the Texas portion is intrastate and is not regulated; most of the electricity is generated with natural gas. Some research on the problem indicates that significant acreages would not be forced out of irrigation until gas prices reach \$4 or \$5 per 1,000 cubic feet, but with current land values debt loads and so forth, many farmers would face bankruptcy with gas prices above \$2.50 per 1,000 cubic feet; 1976 gas prices were about \$1.25 to \$1.35 per 1,000 cubic feet.^{4/}

^{4/} William P. Patton and Ronald D. Lacewell, "Outlook for Energy and Implications for Irrigated Agriculture," Texas Water Resources Institute, TR-87, Sept., 1977; Don Hardin and Ronald D. Lacewell, "Breakeven Natural Gas Prices for Irrigation: Texas High Plains," AAEA contributed paper, San Diego, Calif., Aug., 1977.

The enterprises which compete with cotton are grain sorghum, wheat, and corn. Soybeans, sunflowers, and a host of other crops are primarily "catch crops," grown when primary crops have been destroyed after their normal planting dates or when planting moisture is not available in time. Soybeans and sunflowers will tolerate preplant herbicides, so they can be planted after cotton has been hailed or blown out or if adequate rains to provide moisture for planting do not occur until after early June. Sorghum and wheat have traditionally been the major crops in the Northern area, but corn has occupied large acreages in recent years; cotton competes less favorably there because of the shorter growing season. Cotton competes with sorghum, wheat, and corn in the Western area, but corn tends to be limited to areas where irrigation water is relatively plentiful. Wheat was formerly limited to the medium textured soils on the northern end of the area, but more is now grown on some dryland, coarse textured soils in the Western, Southwestern, and Southern High Plains to help control wind erosion. Water is not generally plentiful enough for corn to compete well with other crops in the Central area. Cotton yields relative to grain yields in the Central, Southwestern, and Southern areas give cotton a competitive advantage. Cotton tends to be favored over other crops throughout the High Plains wherever water is limited. Cotton competes primarily with grain sorghum in the Southwestern and Southern High Plains. Shorter season varieties of cotton should enhance its competitive position throughout the region, but especially in the Northern and Western areas, where the growing season is shorter.

Appendix table 1: Cropland utilization in the Northern High Plains, 1974

Crop	Cropland harvested (1,000 acres)						Total			
	Texas			New Mexico						
	Armstrong	Briscoe	Castro	Deaf Smith	Parmer	Randall	Swisher	Curry	Quay	
Cotton	2.5	40.2	49.1	4.1	37.7	1.0	58.0	.6	1.6	194.8
Alfalfa	0	.7	2.8	5.4	1.9	.6	1.3	2.4	8.0	23.1
Grains	47.1	66.4	247.1	251.3	327.4	121.1	220.4	156.8	38.2	1,475.8
(Corn)	(.7)	(1.9)	(90.0)	(59.0)	(172.0)	(2.5)	(5.8)	(13.0)	(1.0)	(345.9)
(Sorghum)	(19.4)	(27.6)	(100.0)	(84.3)	(72.5)	(62.0)	(139.6)	(58.0)	(13.0)	(576.4)
(Wheat)	(27.0)	(36.7)	(56.2)	(104.9)	(77.0)	(55.1)	(73.3)	(79.0)	(24.0)	(533.2)
Vegetables	0	0	4.9	6.4	.9	0	.6	.5	.2	13.5
Trees and vines	0	.3	.1	.1	0	0	0	0	.1	.6
Other	6.1	3.1	30.9	19.5	13.8	8.9	15.6	3.1	4.4	105.4
Total	55.7	110.7	334.9	286.8	381.7	131.6	295.9	163.4	52.5	1,813.2
(Irrigated)	(15.1)	(62.4)	(316.4)	(257.3)	(358.1)	(79.1)	(274.0)	(138.3)	(29.5)	(1,530.2)

Sources: Cited, table 2.

Appendix table 2: Cropland utilization in the Western High Plains, 1974

Crop	Cropland harvested (1,000 acres)					
	Texas			New Mexico		
	Bailey	Cochran	Hockley	Lamb	Roosevelt	Total
Cotton	42.6	61.6	175.4	135.4	8.9	423.0
Alfalfa	11.7	1.6	1.7	8.1	4.0	27.1
Grains	96.2	89.6	101.6	153.1	111.6	552.1
(Corn)	(27.0)	(0)	(0)	(39.0)	(3.0)	(66.0)
(Sorghum)	(43.5)	(78.0)	(94.0)	(100.1)	(68.0)	(383.6)
(Wheat)	(25.5)	(11.0)	(7.6)	(14.0)	(40.5)	(98.6)
Vegetables	1.8	0	.1	3.1	2.3	7.3
Trees and vines	.1	0	.5	0	.6	
Other	3.9	.7	3.0	9.4	26.8	43.8
Total	156.3	153.5	281.8	308.7	153.6	1,053.9
(Irrigated)	(123.6)	(112.0)	(176.4)	(282.4)	(72.8)	(767.2)

Sources: Cited, table 2.

Appendix table 3: Cropland utilization in the Central High Plains, 1974

Crop	:	Cropland harvested (1,000 acres)					Total
		Crosby	Floyd	:	Hale	Lubbock	
Cotton	:	159.5	140.7		164.5	252.5	717.2
Alfalfa	:	1.0	.6		3.5	1.0	6.1
Grains	:	54.5	215.5		237.4	72.5	579.9
(Corn)	:	(0)	(2.0)		(6.7)	(1.0)	(9.7)
(Sorghum)	:	(38.1)	(130.5)		(178.4)	(55.4)	(402.4)
(Wheat)	:	(16.0)	(83.0)		(52.3)	(16.1)	(167.4)
Vegetables	:	.1		1.2	3.2	.4	4.9
Trees and vines	:	0	0		.2	.1	.3
Other	:	5.9	17.5		45.1	5.3	73.8
Total	:	221.0	375.5		453.9	331.8	1,382.2
(Irrigated)	:	(150.6)	(285.7)		(412.9)	(270.5)	(1,119.7)

Sources: Cited, table 2.

Appendix table 4: Cropland utilization in the Southern High Plains, 1974

Crop	Dawson	Glasscock	Howard	Cropland harvested (1,000 acres)			Midland	Total
				Lynn	Martin			
Cotton	72.9	21.2	58.1	100.9	89.6	22.1	364.8	
Alfalfa	.7	.4	.1	.3	.7	2.4	4.6	
Grains	60.6	6.7	2.6	30.3	10.4	5.1	115.7	
(Corn)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	
(Sorghum)	(58.5)	(5.8)	(2.6)	(25.2)	(9.7)	(5.1)	(106.9)	
(Wheat)	(1.9)	(.7)	(0)	(5.1)	(.5)	(0)	8.2	
Vegetables	0	.1	.1	.3	.1	0	.6	
Trees and vines	0	.1	0	0	.2	.3	.6	
Other	4.4	1.8	.5	1.2	1.9	0	9.8	
Total	138.6	30.3	61.4	133.0	102.9	29.9	496.1	
(Irrigated)	(35.9)	(17.9)	(6.3)	(52.3)	(11.5)	(11.5)	(138.1)	

Sources: Cited, table 2.

Appendix table 5: Cropland utilization in the Southwestern High Plains, 1974

Crop	Cropland harvested (1,000 acres)					
	Texas			New Mexico		
	Andrews	Gaines	Terry	Yoakum	Lea	Total
Cotton	4.7	205.6	170.3	58.5	18.4	457.5
Alfalfa	0	18.0	1.7	4.8	11.0	35.5
Grains	4.9	83.4	152.1	130.6	25.9	396.9
(Corn)	(0)	(0)	(0)	(0)	(.7)	(.7)
(Sorghum)	(4.3)	(65.0)	(133.0)	(126.7)	(23.7)	(352.7)
(Wheat)	(.6)	(18.1)	(19.0)	(3.9)	(.5)	(42.1)
Vegetables	0	5.1	3.5	1.7	.8	11.1
Trees and vines	0	2.7	.5	.2	.1	3.5
Other	0	6.0	3.3	.1	3.1	12.5
Total	9.6	320.8	331.4	195.9	59.3	917.0
(Irrigated)	(4.3)	(205.5)	(158.2)	(69.7)	(57.6)	(465.3)

Sources: Cited, table 2.

Appendix table 6: Cotton acreage production, and yield per acre,
Northern High Plains

Year	Acres planted	Acres harvested	Bales produced	Pounds of lint per acre
1947	50,450	46,080	23,750	247
1948	56,510	52,460	23,910	218
1949	123,084	120,384	73,885	294
1950	42,630	38,530	14,330	178
1951	205,800	190,000	92,680	234
1952	316,900	286,000	157,800	264
1953	354,500	323,500	210,700	312
1954	212,500	204,700	197,500	463
1955	189,500	181,200	160,500	425
1956	191,400	182,400	200,300	527
1957	188,900	181,500	160,440	424
1958	197,550	188,850	220,700	560
1959	209,100	189,100	167,000	423
1960	214,800	200,500	190,500	456
1961	213,400	200,280	226,900	543
1962	215,500	203,400	259,500	612
1963	203,700	179,500	205,700	550
1964	201,640	191,165	225,242	565
1965	198,110	189,200	220,962	560
1966	132,330	122,100	105,609	415
1967	121,220	89,350	93,772	503
1968	141,300	107,600	98,500	439
1969	177,410	139,280	105,435	363
1970	165,200	142,600	130,100	437
1971	194,100	163,200	74,100	217
1972	200,170	169,000	155,940	442
1973	173,465	165,000	139,080	404
1974	232,170	203,660	111,805	263
	Average Yield 1974 - 1956 -- 324.6 pounds			
	Average Yield 1956 - 1965 -- 526.2 pounds			
	Average Yield 1965 - 1974 -- 405.9 pounds			

Source: U.S. Department of Agriculture, Statistical Reporting Service.
Crop Production Reports.

Appendix table 7: Cotton acreage, production, and yield per acre,
Western High Plains

Year	Acres planted	Acres harvested	Bales produced	Pounds of lint per acre
1947	641,000	634,000	313,700	237
1948	653,500	633,000	197,900	150
1949	876,000	865,000	522,000	289
1950	453,000	409,000	153,900	180
1951	873,000	807,000	338,700	201
1952	829,000	775,700	400,800	248
1953	754,000	675,500	364,100	258
1954	599,500	557,000	388,400	334
1955	581,500	552,500	356,100	309
1956	562,000	532,500	460,000	414
1957	561,400	541,500	412,500	365
1958	563,400	532,100	504,400	455
1959	586,500	561,000	494,700	423
1960	578,300	535,400	464,100	416
1961	621,800	586,000	593,200	485
1962	600,400	562,000	615,800	525
1963	561,300	518,000	531,600	492
1964	576,800	509,000	481,200	453
1965	547,800	522,700	534,800	491
1966	357,300	340,800	303,000	426
1967	347,000	288,300	254,700	424
1968	377,300	362,700	387,800	513
1969	500,700	425,700	282,500	318
1970	513,200	481,700	362,000	360
1971	534,800	492,200	239,900	233
1972	543,700	471,200	380,200	387
1973	558,900	575,700	513,300	427
1974	482,300	414,100	224,100	259
	Average Yield 1947 - 1956 -- 262.0 pounds			
	Average Yield 1956 - 1965 -- 453.4 pounds			
	Average Yield 1965 - 1974 -- 384.6 pounds			

Source: U.S. Department of Agriculture, Statistical Reporting Service.
Crop Production Reports.

Appendix table 8. Cotton acreage, production, and yield per acre,
Central High Plains

Year	Acres planted	Acres harvested	Bales produced	Pounds of lint per acre
1947	538,000	532,700	350,200	315
1948	561,500	547,500	265,000	232
1949	820,500	816,000	598,500	352
1950	474,000	449,500	282,300	301
1951	970,000	945,000	421,800	214
1952	1,076,000	1,053,000	652,500	297
1953	880,000	813,000	686,000	405
1954	669,500	652,000	645,000	474
1955	623,500	601,000	525,000	419
1956	603,500	570,800	644,000	541
1957	602,200	580,200	519,000	429
1958	598,100	578,500	683,100	566
1959	643,000	592,500	624,100	505
1960	649,800	603,600	656,500	522
1961	670,500	630,000	705,600	537
1962	661,800	628,800	780,700	595
1963	604,000	577,000	679,700	565
1964	627,100	594,000	703,900	568
1965	606,400	580,700	761,200	629
1966	400,200	376,700	394,700	502
1967	385,400	351,900	423,300	577
1968	461,600	387,500	362,200	448
1969	558,600	481,900	395,700	394
1970	580,300	558,800	563,100	483
1971	629,300	603,100	380,700	302
1972	644,200	587,600	652,600	533
1973	695,200	689,000	802,800	559
1974	788,800	717,200	427,300	285
	Average Yield 1947 - 1956 -- 355.4 pounds			
	Average Yield 1956 - 1965 -- 546.2 pounds			
	Average Yield 1965 - 1974 -- 471.7 pounds			

Source: U.S. Department of Agriculture, Statistical Reporting Service.
Crop Production Reports.

Appendix table 9: Cotton acreage, production, and yield per acre,
Southern High Plains

Year	Acres planted	Acres harvested	Bales produced	Pounds of lint per acre
1947	772,700	764,850	295,580	185
1948	740,000	722,700	153,900	102
1949	941,306	931,966	530,114	273
1950	636,630	607,090	300,125	237
1951	931,000	849,000	196,060	110
1952	948,190	822,700	164,720	96
1953	377,140	278,150	83,450	144
1954	637,600	612,600	263,430	206
1955	585,400	541,800	258,450	228
1956	546,750	461,000	218,020	227
1957	562,340	530,500	344,400	311
1958	579,300	543,000	406,650	359
1959	604,000	552,200	377,300	327
1960	598,750	549,900	438,100	382
1961	663,800	609,500	545,500	429
1962	627,600	584,600	380,700	312
1963	585,700	542,680	428,100	378
1964	609,000	463,500	267,430	276
1965	552,200	516,300	463,400	430
1966	388,700	368,550	360,100	468
1967	343,850	284,200	239,300	404
1968	455,300	446,500	497,800	535
1969	567,450	546,100	381,500	335
1970	609,900	596,400	429,300	345
1971	650,100	617,300	362,900	282
1972	708,600	628,200	599,900	458
1973	762,700	750,600	883,600	565
1974	543,900	364,800	166,500	219
:	Average Yield 1947 - 1956 -- 181.1 pounds			
:	Average Yield 1956 - 1965 -- 343.7 pounds			
:	Average Yield 1965 - 1974 -- 404.5 pounds			
:				

Source: U.S. Department of Agriculture, Statistical Reporting Service.
Crop Production Reports.

Appendix table 10. Cotton acreage, production and yield per acre,
Southwestern High Plains

Year	Acres planted	Acres harvested	Bales produced	Pounds of lint per acre
1947	214,000	209,320	71,724	164
1948	195,500	186,970	43,880	112
1949	311,424	305,424	143,605	225
1950	189,070	173,510	72,305	200
1951	435,900	409,000	135,310	158
1952	538,000	518,800	132,830	122
1953	181,700	142,080	82,585	279
1954	306,770	293,760	155,620	254
1955	253,380	235,330	141,930	289
1956	294,740	272,780	207,620	365
1957	281,060	266,200	161,170	290
1958	302,960	280,310	257,650	441
1959	297,000	269,600	280,540	499
1960	298,250	274,800	223,600	390
1961	324,900	299,880	324,290	519
1962	321,600	305,500	314,350	493
1963	301,300	278,300	271,570	468
1964	304,760	254,800	261,626	492
1965	288,410	265,500	298,280	539
1966	204,590	193,220	196,147	487
1967	196,180	186,150	201,902	520
1968	254,900	245,400	265,470	519
1969	310,050	294,900	238,840	388
1970	336,630	324,520	256,162	378
1971	406,000	371,500	206,200	266
1972	506,200	453,600	402,700	426
1973	568,200	559,100	474,500	407
1974	544,300	457,500	267,100	280
:	Average Yield 1947 - 1956 -- 217.3 pounds			
:	Average Yield 1956 - 1965 -- 450.1 pounds			
:	Average Yield 1965 - 1974 -- 421.4 pounds			

Source: U.S. Department of Agriculture, Statistical Reporting Service.
Crop Production Reports.

Appendix table 11: Annual amount of irrigation water used in Northern High Plains, 1974

County	Surface water	Groundwater	Total
-----1,000 acre feet-----			
Texas			
Armstrong	0	30.3	30.3
Briscoe	1.0	102.0	103.0
Castro	0	546.2	546.2
Deaf Smith	0	514.8	514.8
Parmer	.1	605.6	605.7
Randall	.8	96.1	96.9
Swisher	0	474.9	474.9
Sub-total	1.9	2,369.9	2,371.8
New Mexico			
Curry	0	305.2	305.2
Quay	60.7	34.9	95.6
Sub-total	60.7	340.1	400.8
Total	62.6	2,710.0	2,772.6

Sources: Cited, table 3.

Appendix table 12: Annual amount of irrigation water used in Western High Plains, 1974

County	Surface water	Groundwater	Total
-----1,000 acre feet-----			
Texas			
Bailey	0	375.9	375.9
Cochran	0	85.6	85.6
Hockley	0	345.5	345.5
Lamb	0	413.9	413.9
Sub-total	0	1,220.9	1,220.9
New Mexico			
Roosevelt	0	238.9	238.9
Total	0	1,459.8	1,459.8

Sources: Cited, table 3.

Appendix table 13: Annual amount of irrigation water used in Central High Plains, 1974

County	Surface water	Groundwater	Total
-----1,000 acre feet-----			
Texas			
Crosby	1.0	231.8	232.8
Floyd	0	287.4	287.4
Hale	.3	826.1	826.4
Lubbock	6.5	271.9	278.4
Total	7.8	1,617.2	1,625.0

Sources: Cited, table 3.

Appendix table 14: Annual amount of irrigation water used in Southern High Plains, 1974

County	Surface water	Groundwater	Total
-----1,000 acre feet-----			
Texas			
Dawson	0	31.2	31.2
Glasscock	0	55.1	55.1
Howard	.1	2.4	2.5
Lynn	.1	72.3	72.4
Martin	0	29.8	29.8
Midland	1.2	36.3	37.5
Total	1.4	227.1	228.5

Sources: Cited table 3.

Appendix table 15: Annual amount of irrigation water used in Southwestern High Plains, 1974

County	Surface water	Groundwater	Total
-----1,000 acre feet-----			
Texas			
Andrews	0	5.3	5.3
Gaines	0	310.8	310.8
Terry	.1	145.5	145.6
Yoakum	0	138.7	138.7
Sub-total	.1	600.3	600.4
New Mexico			
Lea	0	191.3	191.3
Total	.1	791.6	791.7

Sources, Cited, table 3.

Appendix table 16: Selected characteristics of farms with sales of at least \$2,500, High Plains, 1974

Item	Farms reporting	Average per farm	Average per farm reporting	Acreage irrigated	Acreage fertilized	Yield per acre
	Percent	Acres	Acres	Percent	Percent	
Total number farms - 14,765						
Total acres - 20.2 million						
Total land (acres).....	100	1,365	1,365	19	18	
Cropland.....	93	628	676	41		
Cotton.....	63	145	231	67	58	0.6 bls.
Wheat.....	35	59	169	56	64	19 bu.
Barley.....	1	1	65	81	82	41 bu.
Sorghum.....	59	125	213	57	57	1/49 bu.
Hay.....	14	10	72	73	51	3.1 tons
Vegetables.....	2	1	46	92	97	
Orchards.....	1	0	36	76	64	
Irrigated land.....	67	263	393	100		
Furrows or ditches.....	49	187	383			
Sprinkler systems.....	23	65	281			
Irrigated cropland.....	67	260	390	100		
Land fertilized.....	64	244	384		100	
Row crop insecticides.....	29	105	367			
Crop herbicides.....	40	163	409			
Defoliants.....	3	5	177			
Ownership:						
Full owners.....	33	276	846			
Part owners.....	40	834	2,107			
Tenants.....	28	255	918			
Size:						
100-499 acres.....	34					
500-1,999 acres.....	47					
2,000 acres and over....	11					
Operator age 65 and over...	12					
Operators working off-farm						
200 days and over.....	12					
Number						
Wheel tractors.....	86	2.4	2.8			
1970 or newer.....		0.8	1.0			
Crawler tractors.....	2	0.0	1.3			
Acre ft. irrigation water applied per acre...			1.4			

1/ Harvested for grain.

Appendix table 17: Selected characteristics of farms with sales of at least \$2,500, Northern High Plains, 1974

Item	Farms reporting	Average per farm	Average per farm reporting	Acreage irrigated	Acreage fertilized	Yield per acre
	Percent	Acres	Acres	Percent	Percent	
Total number farms - 4,532						
Total acres - 6.8 million						
Total land (acres).....	100	1,491	1,491	21	20	
Cropland.....	91	667	729	47		
Cotton.....	35	38	110	79	59	0.6 bls.
Wheat.....	65	130	199	63	73	20 bu.
Barley.....	3	2	66	85	89	43 bu.
Sorghum.....	60	123	204	77	72	1/68 bu.
Hay.....	18	10	57	64	36	2.7 tons
Vegetables.....	2	1	51	96	98	
Orchards.....	0	0	17	71	61	
Irrigated land.....	67	319	477	100		
Furrows or ditches.....	58	275	476			
Sprinkler systems.....	9	22	248			
Irrigated cropland.....	67	316	475	100		
Land fertilized.....	68	299	440		100	
Row crop insecticides.....	40	173	434			
Crop herbicides.....	36	136	374			
Defoliants.....	1	1	108			
Ownership:						
Full owners.....	37	352	945			
Part owners.....	38	893	2,379			
Tenants.....	25	246	976			
Size:						
100-499 acres.....	30					
500-1,999 acres.....	48					
2,000 acres and over....	15					
Operator age 65 and over...		13				
Operators working off-farm						
200 days and over.....	10					
Wheel tractors.....	87	2.4	2.8			
1970 or newer.....		0.9	1.0			
Crawler tractors.....	2	0.0	1.1			
Acre ft. irrigation water applied per acre...			1.6			

1/ Harvested for grain.

Source: U.S. Department of Commerce, Bureau of the Census, 1974 Census of Agriculture.

Appendix table 18: Selected characteristics of farms with sales of at least \$2,500,
Western High Plains, 1974

Item	Farms reporting	Average per farm	Average per farm reporting	Acreage irrigated	Acreage fertilized	Yield per acre
	Percent	Acres	Acres	Percent	Percent	
Total number farms - 3,054						
Total acres - 3.5 million						
Total land (acres).....	100	1,126	1,126	21	18	
Cropland.....	94	563	600	42		
Cotton.....	67	137	205	79	57	0.6 bls.
Wheat.....	22	30	136	33	34	12 bu.
Barley.....	0	0	86	69	62	27 bu.
Sorghum.....	64	126	199	53	47	1/40 bu.
Hay.....	15	13	87	76	58	
Vegetables.....	2	1	41	88	96	
Orchards.....	0	0	10	99	13	
Irrigated land.....	70	238	340	100		
Furrows or ditches.....	52	145	279			
Sprinkler systems.....	39	92	239			
Irrigated cropland.....	70	237	339	100		
Land fertilized.....	62	201	324		100	
Row crop insecticides.....	26	68	275			
Crop herbicides.....	40	153	385			
Defoliants.....	2	3	171			
Ownership:						
Full owners.....	32	236	739			
Part owners.....	40	683	1,714			
Tenants.....	28	207	733			
Size:						
100-499 acres.....	37					
500-1,999 acres.....	45					
2,000 acres and over.....	9					
Operator age 65 and over...	11					
Operators working off-farm :						
200 days and over.....	9					
Wheel tractors.....	84					
1970 or newer.....		2.3	2.7			
Crawler tractors.....	1					
Acre ft. irrigation water applied per acre...			1.5			

1/ Harvested for grain.

Appendix table 19: Selected characteristics of farms with sales of at least \$2,500, Central High Plains, 1974

Item	Average		Average		Yield	
	Farms reporting	per farm	per farm	Acreage reporting	Acreage irrigated	Acreage fertilized
	Percent	Acres	Acres	Percent	Percent	
Total number farms - 3,258						
Total acres - 2.4 million						
Total land (acres).....	100	733	733	43	35	
Cropland.....	97	558	575	56		
Cotton.....	86	215	250	72	56	0.6 bls.
Wheat.....	39	52	133	42	50	18 bu.
Barley.....	0	0	44	52	8	35 bu.
Sorghum.....	72	126	176	80	73	1/70 bu.
Hay.....	10	3	35	50	31	2.0 tons
Vegetables.....	3	1	40	95	98	
Orchards.....	1	0	12	67	21	
Irrigated land.....	80	318	400	100		
Furrows or ditches.....	75	290	385			
Sprinkler systems.....	7	18	255			
Irrigated cropland.....	79	314	395	100		
Land fertilized.....	72	258	358		100	
Row crop insecticides.....	38	123	322			
Crop herbicides.....	50	221	439			
Defoliants.....	3	4	147			
Ownership:						
Full owners.....	31	166	531			
Part owners.....	37	383	1,046			
Tenants.....	32	184	573			
Size:						
100-499 acres.....	43					
500-1,999 acres.....	43					
2,000 acres and over.....	5					
Operator age 65 and over...	11					
Operators working off-farm						
200 days and over.....	10					
		Number				
Wheel tractors.....	89	2.7	3.0			
1970 or newer.....		0.9	1.0			
Crawler tractors.....	1	0.0	1.7			
Acre ft. irrigation water applied per acre...			1.3			

1/ Harvested for grain.

Appendix table 20: Selected characteristics of farms with sales of at least \$2,500, Southern High Plains, 1974

Item	Farms reporting	Average per farm	Average per farm reporting	Acreage irrigated	Acreage fertilized	Yield per acre
	Percent	Acres	Acres	Percent	Percent	
Total number farms - 2,059	:					
Total acres - 3.1 million	:					
Total land (acres).....	100	1,526	1,526	5	7	
Cropland.....	92	628	683	13		
Cotton.....	75	193	258	36	40	0.5 bls.
Wheat.....	3	3	103	5	19	17 bu.
Barley.....	0	0	76	27	22	18 bu.
Sorghum.....	28	60	213	6	22	1/16 bu.
Hay.....	8	4	53	34	23	
Vegetables.....	1	0	18	35	99	
Orchards.....	1	0	13	23	36	
Irrigated land.....	42	82	197	100		
Furrows or ditches.....	20	38	191			
Sprinkler systems.....	24	44	183			
Irrigated cropland.....	42	82	197	100		
Land fertilized.....	37	101	268		100	
Row crop insecticides.....	8	25	315			
Crop herbicides.....	36	143	402			
Defoliants.....	7	12	180			
Ownership:						
Full owners.....	27	251	920			
Part owners.....	44	898	2,045			
Tenants.....	29	377	1,308			
Size:						
100-499 acres.....	33					
500-1,999 acres.....	49					
2,000 acres and over.....	12					
Operator age 65 and over...	12					
Operators working off-farm						
200 days and over.....	14					
Wheel tractors.....	85	2.4	2.8			
1970 or newer.....		0.9	1.0			
Crawler tractors.....	2	0.0	1.3			
Acre ft. irrigation water applied per acre...			1.0			

1/ Harvested for grain.

Appendix table 21: Selected characteristics of farms with sales of at least \$2,500, Southwestern High Plains, 1974

Item	Average		Average		Yield	
	Farms reporting	per farm	per farm reporting	Acreage irrigated	Acreage fertilized	per acre
	Percent	Acres	Acres	Percent	Percent	
Total number farms - 1,862	:					
Total acres - 4.4 million	:					
Total land (acres).....	:	100	2,379	2,379	11	13
Cropland.....	:	90	772	862	34	
Cotton.....	:	71	239	338	70	80 0.6 bds.
Wheat.....	:	12	11	91	62	66 18 bu.
Barley.....	:	0	0	60	86	82 31 bu.
Sorghum.....	:	59	201	341	21	39 1/18 bu.
Hay.....	:	19	24	127	95	72 3.8 tons
Vegetables.....	:	2	1	80	91	91
Orchards.....	:	2	2	80	81	74
Irrigated land.....	:	67	270	402	100	
Furrows or ditches.....	:	12	39	324		
Sprinkler systems.....	:	60	232	384		
Irrigated cropland.....	:	67	266	397		
Land fertilized.....	:	69	311	452		100
Row crop insecticides.....	:	12	50	432		
Crop herbicides.....	:	36	168	470		
Defoliants.....	:	6	14	236		
Ownership:	:					
Full owners.....	:	31	381	1,224		
Part owners.....	:	44	1,653	3,726		
Tenants.....	:	25	345	1,407		
Size:	:					
100-499 acres.....	:	26				
500-1,999 acres.....	:	48				
2,000 acres and over.....	:	17				
Operator age 65 and over...	:	10				
Operators working off-farm	:					
200 days and over.....	:	14				
Wheel tractors.....	:	85	2.4	2.8		
1970 or newer.....	:		0.8	1.0		
Crawler tractors.....	:	3	0.0	1.4		
Acre ft. irrigation water applied per acre...	:			1.4		

1/ Harvested for grain.

Appendix table 22: Selected characteristics of farms with sales of at least \$2,500, Northern High Plains, 1969

Item	Farms reporting	Average per farm	Average per farm reporting	Acreage irrigated	Acreage fertilized	Yield per acre
	Percent	Acres	Acres	Percent	Percent	
Total number farms - 5,195						
Total acres - 6.8 million						
Total land (acres).....	100	1,303	1,303	21	18	
Cropland.....	93	622	670	43		
Cotton.....	43	27	64	90	90	0.8 bls.
Wheat.....	70	93	133	59	57	28 bu.
Barley.....	2	1	53	75	72	55 bu.
Sorghum.....	77	150	195	59	58	1/88 bu.
Hay.....	18	9	50	60	31	2.7 tons
Vegetables.....	3	1	43	99	100	
Orchards.....	1	0	9	78	88	
Irrigated land.....	71	272	383	100		
Furrows or ditches.....						
Sprinkler systems.....						
Irrigated cropland.....	71	269	380	100		
Land fertilized.....	70	237	340		100	
Row crop insecticides.....	51	143	280			
Crop herbicides.....	52	129	250			
Defoliants.....	1	2	114			
Ownership:						
Full owners.....	33	255	765			
Part owners.....	39	827	2,122			
Tenants.....	28	221	799			
Size:						
100-499 acres.....	34					
500-1,999 acres.....	49					
2,000 acres and over.....	12					
Operator age 65 and over...	11					
Operators working off-farm						
200 days and over.....	13					
Wheel tractors.....	69	1.8	2.6			
1965 or newer.....		1.0	1.0			
Crawler tractors.....	3	0.0	1.4			
Acre ft. irrigation water applied per acre...				N.A.		

1/ Harvested for grain.

Appendix table 23: Selected characteristics of farms with sales of at least \$2,500, Western High Plains, 1969

Item	Farms reporting	Average per farm	Average per farm reporting	Acreage irrigated	Acreage fertilized	Yield per acre
	Percent	Acres	Acres	Percent	Percent	
Total number farms - 3,092	:					
Total acres - 2.2 million	:					
Total land (acres).....	100	705	705	32	30	
Cropland.....	98	529	541	42		
Cotton.....	87	144	167	73	75	0.6 bls.
Wheat.....	11	6	50	47	44	26 bu.
Barley.....	0	0	26	73	51	15 bu.
Sorghum.....	85	163	192	47	46	1/40 bu.
Hay.....	11	6	50	75	37	
Vegetables.....	2	1	29	93	92	
Orchards.....	1	0	8	77	54	
Irrigated land.....	83	226	273	100		
Furrows or ditches.....						
Sprinkler systems.....						
Irrigated cropland.....	83	224	271	100		
Land fertilized.....	82	208	253		100	
Row crop insecticides.....	43	88	206			
Crop herbicides.....	61	163	268			
Defoliants.....	4	4	122			
Ownership:						
Full owners.....	26	133	501			
Part owners.....	37	349	954			
Tenants.....	37	223	604			
Size:						
100-499 acres.....	49					
500-1,999 acres.....	42					
2,000 acres and over....	3					
Operator age 65 and over...	8					
Operators working off-farm						
200 days and over.....	10					
Wheel tractors.....	92	2.3	2.5			
1965 or newer.....		0.8	0.9			
Crawler tractors.....	1	0.0	1.6			
Acre ft. irrigation water applied per acre...				N.A.		

1/ Harvested for grain.

Appendix table 24: Selected characteristics of farms with sales of at least \$2,500, Central High Plains, 1969

Item	Farms reporting	Average per farm	Average per farm reporting	Acreage irrigated	Acreage fertilized	Yield per acre
	Percent	Acres	Acres	Percent	Percent	
Total number farms - 3,974	:					
Total acres - 2.5 million	:					
Total land (acres).....	100	626	626	45	38	
Cropland.....	97	488	501	57		
Cotton.....	87	128	148	85	82	0.8 bls.
Wheat.....	38	33	87	52	42	28 bu.
Barley.....	0	0	36	80	77	29 bu.
Sorghum.....	86	123	143	81	72	1/66 bu.
Hay.....	8	3	31	63	26	
Vegetables.....	4	1	37	98	98	
Orchards.....	1	0	11	78	62	
Irrigated land.....	89	280	315	100		
Furrows or ditches.....						
Sprinkler systems.....						
Irrigated cropland.....	89	279	314	100		
Land fertilized.....	88	235	267		100	
Row crop insecticides.....	45	93	208			
Crop herbicides.....	64	168	261			
Defoliants.....	5	5	111			
Ownership:						
Full owners.....	29	115	398			
Part owners.....	35	331	958			
Tenants.....	37	180	492			
Size:						
100-499 acres.....	53					
500-1,999 acres.....	37					
2,000 acres.....	3					
Operator age 65 and over...	8					
Operators working off-farm						
200 days and over.....	9					
Wheel tractors.....	92	2.5	2.7			
1965 or newer.....		1.0	1.1			
Crawler tractors.....	2	0.0	1.9			
Acre ft. irrigation water applied per acre...				N.A.		

1/ Harvested for grain.

Appendix table 25: Selected characteristics of farms with sales of at least \$2,500, Southern High Plains, 1969

Item	Farms reporting	Average per farm	Average per farm reporting	Acreage irrigated	Acreage fertilized	Yield per acre
	Percent	Acres	Acres	Percent	Percent	
Total number farms - 2,782	:					
Total acres - 3.6 million	:					
Total land (acres).....	100	1,294	1,294	6	8	
Cropland.....	94	541	574	13		
Cotton.....	88	209	236	27	40	0.7 bls.
Wheat.....	4	2	48	7	14	19 bu.
Barley.....	0	0	23	0	0	35 bu.
Sorghum.....	71	125	178	8	9	1/20 bu.
Hay.....	8	3	42	27	18	
Vegetables.....	2	1	40	17	18	
Orchards.....	2	0	10	41	61	
Irrigated land.....	42	71	170	100		
Furrows or ditches.....						
Sprinkler systems.....						
Irrigated cropland.....	42	71	170	100		
Land fertilized.....	50	97	194		100	
Row crop insecticides.....	10	19	185			
Crop herbicides.....	40	120	296			
Defoliants.....	29	54	183			
Ownership:						
Full owners.....	27	176	659			
Part owners.....	39	763	1,957			
Tenants.....	34	354	1,035			
Size:						
100-499 acres.....	40					
500-1,999 acres.....	45					
2,000 acres and over....	9					
Operator age 65 and over...	11					
Operators working off-farm						
200 days and over.....	13					
Wheel tractors.....	90	2.3	2.5			
1965 or newer.....		1.0	1.2			
Crawler tractors.....	2	0.0	1.6			
Acre ft. irrigation water applied per acre...				N.A.		

1/ Harvested for grain.

Appendix table 26: Selected characteristics of farms with sales of at least \$2,500, Southwestern High Plains, 1969

Item	Farms reporting	Average per farm	Average per farm reporting	Acreage irrigated	Acreage fertilized	Yield per acre
	Percent	Acres	Acres	Percent	Percent	
Total number farms - 2,103	:					
Total acres - 4.4 million	:					
Total land (acres).....	100	2,110	2,110	10	11	
Cropland.....	90	596	664	34		
Cotton.....	76	148	194	74	85	0.8 bls.
Wheat.....	9	7	76	59	62	29 bu.
Barley.....	0	0	26	92	38	25 bu.
Sorghum.....	72	209	290	27	39	1/23 bu.
Hay.....	15	11	70	80	47	4.0 tons
Vegetables.....	4	4	95	33	42	
Orchards.....	2	0	12	83	86	
Irrigated land.....	72	205	283	100		
Furrows or ditches.....						
Sprinkler systems.....						
Irrigated cropland.....	72	203	282	100		
Land fertilized.....	76	233	307		100	
Row crop insecticides.....	17	36	210			
Crop herbicides.....	39	90	232			
Defoliants.....	14	22	153			
Ownership:						
Full owners.....	31	250	814			
Part owners.....	41	1,496	3,650			
Tenants.....	28	364	1,284			
Size:						
100-499 acres.....	35					
500-1,999 acres.....	45					
2,000 acres.....	14					
Operator age 65 and over...	9					
Operators working off-farm						
200 days and over.....	18					
Wheel tractors.....	88	2.2	2.6			
1965 or newer.....		1.0	1.1			
Crawler tractors.....	2	0.0	1.4			
Acre ft. irrigation water applied per acre...				N.A.		

1/ Harvested for grain.

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